5. $f(x) = \frac{2x-3}{x^{\frac{1}{2}}}$ $\quad P = 2x-3 \quad P' = 2$ $\quad Q = x^{\frac{1}{2}} \quad Q' = \frac{1}{2}x^{-\frac{1}{2}} = \frac{1}{2x^{\frac{1}{2}}}$

$$\frac{P'Q - PQ'}{Q^2}$$

$$f'(x) = \frac{2x^{1/2} - (2x-3)\left(\frac{1}{2x^{1/2}}\right)}{(x^{1/2})^2}$$

$$= \frac{2x^{1/2} - \frac{2x-3}{2x^{1/2}}}{x}$$

$$= \frac{2x^{1/2}(2x^{1/2}) - 2x^{1/2}\left(\frac{2x-3}{2x^{1/2}}\right)}{x \cdot 2x^{1/2}}$$

$$= \frac{4x^{\frac{1}{2}+\frac{1}{2}} - (2x-3)}{2x^{1+\frac{1}{2}}}$$

$$= \frac{4x - 2x + 3}{2x^{3/2}}$$

$$= \frac{2x+3}{2x^{3/2}}$$